

CLAIMS

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1. A feedstuff additive for crustaceans or fishes, characterized in that it is prepared from gram-negative bacteria, that it has a molecular weight of 5000 ± 2000 as measured by SDS-PAGE method using a protein marker, that it is substantially free of high molecular weight lipopolysaccharide, that it contains a low molecular weight lipopolysaccharide as an effective component and that it is capable of activating immunity or preventing infection in crustaceans or fishes.

2. A feedstuff additive for crustaceans or fishes comprising the low molecular weight lipopolysaccharide of claim 1 and a carrier acceptable for crustaceans and fishes.

3. Use of the low molecular weight lipopolysaccharide of claim 1 for the preparation of a feedstuff additive for crustaceans or fishes.

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4. A method of activating immunity or preventing infection in crustaceans or fishes comprising administering an effective amount of the low molecular weight lipopolysaccharide of claim 1 to crustaceans or fishes.

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5. An agent for preventing the perish of crustaceans or fishes comprising the low molecular weight lipopolysaccharide of claim 1 as an effective component.

6. An agent for preventing the perish of crustaceans or fishes comprising the low molecular weight lipopolysaccharide of claim 1 and a carrier acceptable for crustaceans and fishes.

7. Use of the low molecular weight lipopolysaccharide of claim 1 for the preparation of an agent for preventing the

~~perish of crustaceans or fishes.~~

8. A method of preventing the perish of crustaceans or fishes comprising administering an effective amount of the low molecular weight lipopolysaccharide of claim 1 to crustaceans or fishes.

9. A feedstuff additive according to claim 1, wherein the gram-negative bacteria are those pertaining to genus Pantoea.

10. A feedstuff additive according to claim 9, wherein the gram-negative bacteria are Pantoea agglomerans.

11. A feed for crustaceans or fishes comprising the feedstuff additive of claim 1.

12. A feed for crustaceans or fishes comprising the agent for preventing the perish of claim 5.

13. A method of breeding crustaceans or fishes comprising administering a feed of claim 11 to crustaceans or fishes.

14. A method of breeding crustaceans or fishes comprising administering a feed of claim 12 to crustaceans or fishes.

15. A feedstuff additive according to claim 1, wherein the infectious diseases is acute viremia of crustaceans, their vibrio diseases, parasitosis or mycosis ; iridovirus infectious diseases of fishes, their rhabdovirus diseases, neuroncrosis, infectious hemopoietic organ necrosis, pseudotuberculosis, streptococcic diseases, enterococcus diseases, vibrio diseases, cold-water disease, Pseudomonas diseases, gliding-bacteria diseases or Saprolegnia diseases.

16. A feedstuff additive according to claim 1, wherein the high molecular weight lipopolysaccharide is one having a molecular weight of at least 8,000.